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BRITISH COLUMBIA EXPLORATION AND DEVELOPMENT HIGHLIGHTS FOR 1991

By V.A. Preto,

INTRODUCTION

The year 1991 was again one of significant developments in British Columbia, but also of severely decreased exploration activity, particularly by junior companies and individual prospectors. These proven mine finders struggled against a lack of investor confidence, softening base and precious metal prices, rising costs, increased concern over land alienation, and mounting offshore competition.

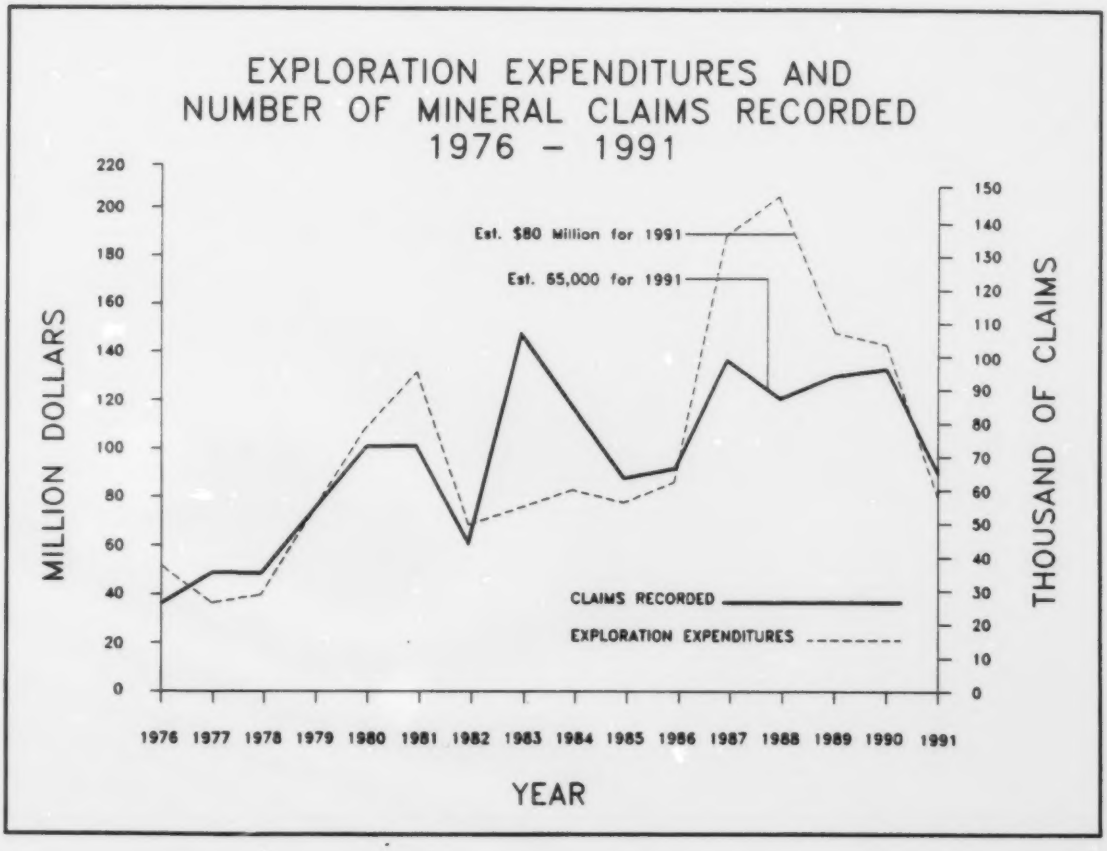
In spite of these difficulties, British Columbia's mineral resources proved worthy of the challenge, and the junior sector confirmed its resilience, innovation and effectiveness by making significant progress in two major, large-tonnage copper-gold projects, **Fish Lake** and **Kemess**. These, and others, are the subject of this Review.

Exploration expenditures in 1991 are expected to total approximately $80 million, a significant decrease from $143 million in 1990. Activity was primarily in the central and northern parts of the province, in pursuit of precious and base metal targets.

New mineral claims staked for the year are estimated at 65 000, a drop of 34 per cent from the 98 256 staked in 1990.

MINES

Total value of British Columbia's mineral production for 1991 is estimated at $2.8 billion compared to approximately $3.0 billion for the previous year. Copper remains the most important metal by far, with a projected production of 348 000 tonnes, worth in excess of $875 million. Coal continues at the top of the solid mineral production



LOCATION OF PROJECTS

NEW MINES ▲

DEVELOPMENT STAGE ●

ADVANCED EXPLORATION STAGE ■

list with an anticipated output of 25 million tonnes valued at $950 million. Gold production is projected at 18 million grams (about 579 720 ounces) valued at $240 million, compared to 16.4 million grams (527 280 ounces) in 1990. This represents an increase of 1.6 million grams (51 440 ounces), or 9.7 per cent, due primarily to the opening of the **Snip** mine which was, in part, offset by the closing of the **Blackdome** mine. Silver production is anticipated to be down 23 per cent to 490 million grams (15.75 million ounces) valued at $74 million; a drop in value of 56 per cent.

Three new metal mines opened in 1991. The official opening of the $65-million **Snip** mine (60% – Cominco Ltd. and 40% – Prime Resources Group Inc.) was on July 25, 1991, although production actually began six months earlier, on January 25, 1991 with the commissioning of the mill. The plant had been designed for a production rate of 300 tonnes per day and this was achieved six days after start up. From February 1st to March 15th the mill processed an average of 320 tonnes per day with an overall mill recovery of 91 per cent. Diluted ore reserves at start up were 940 000 tonnes grading 28.5 grams per tonne gold, allowing for a projected mine life of 10 years with an annual output of 2.9 million grams (93 000 ounces). During the first six months of life, Snip operated 10 to 20 per cent above design capacity and within projected costs.

The official re-opening of the **Goldstream** copper-zinc mine, (50% – Bethlehem Resources Corporation, 50% – Goldnev Resources Inc.) was on July 9th, 1991. The 1350 tonne-per-day concentrator and mine was built in 1983 by Noranda Inc. at a cost of $72 million and operated for 11 months to April, 1984. Closure was due to low copper prices. Upon re-opening, the deposit contained 1.86 million tonnes, grading 4.81 per cent copper and 3.06 per cent zinc, sufficient for five years of operation. From June 1st to July 31, 1991, a total of 69 505 tonnes was milled, grading 4.11 per cent copper and yielding 2 567 191 kilograms (5 654 607 pounds) of copper for a recovery rate of 89.9 per cent. The rehabilitation of the mine was completed ahead of schedule and under budget, at a cost of $4.4 million.

On March 5, 1991, Westmin Resources Limited announced it would go to production from the **Facecut-35** zone on the SB property of Tenajon Resource Corporation which is adjacent to the **Premier Gold** mine. At the time of the announcement, diluted proven and probable geological reserves for the Facecut-35 zone were 96 209 tonnes grading 9.91 grams per tonne gold, 65.9 grams per tonne silver, 0.32 per cent copper, 0.67 per cent lead and 3.85 per cent zinc. Mill and tailings facilities of the nearby Premier Gold mine are being used to process the ore which was expected to be sufficient for six months of operation.

ADVANCED PROJECTS AND IMPORTANT DEVELOPMENTS

Several projects at the advanced exploration, pre-production or production stage, reached important milestones.

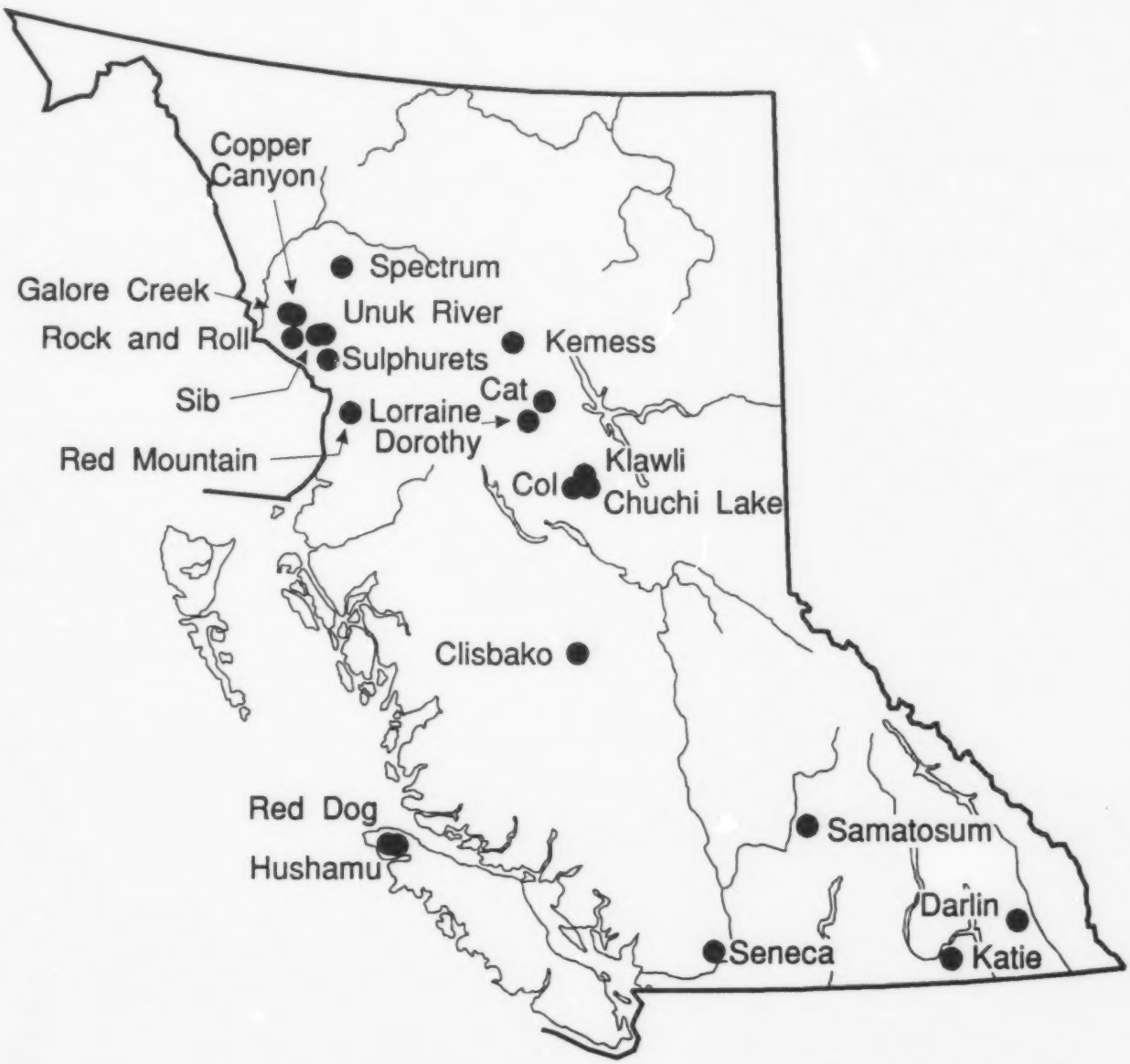
In the extreme northwest corner of the province the **Windy Craggy** Cu-Au-Co project of Geddes Resources Ltd. continued in the Mine Development Review Process with submission of a revised mine plan late in 1990. This was an addendum to the original Stage 1 submission.

International Corona Corporation had spectacular results from a significant underground drilling and development program, and carried out engineering and environmental studies at its rich **Eskay Creek** Au-Ag deposit. In mid-September Placer Dome Inc. and International Corona entered into a joint venture agreement with a view to bringing the project to production by early 1994. Each company would own 50 per cent of the deposit, with Placer funding all exploration, development and construction costs to a total of $240 million. On December 16, Placer Dome announced that, following completion of their property review, it did not intend to proceed to the exploration and feasibility study stage as provided in the September agreement. Reserves at Eskay Creek currently stand at 1.8 million tonnes grading 50.40 grams per tonne gold and 1913 grams per tonne silver, at a cutoff grade of 8.57 grams per tonne gold. There are additional significant base metal values. Most important for this project, and several others in the region, construction of the 37-Kilometre access road from Bob Quinn Lake to the confluence of Volcano Creeek and Iskut River is well underway.

Approval of the *Mine Development Certificate* for the **Stronsay** (formally **Cirque**) Zn-Pb-Ag project was announced September 24, 1991. The deposit, owned 70 per cent by Curragh Resources Inc. and 30 per cent by Asturiana de Zinc of Spain, is located 280 kilometres north of MacKenzie, the nearest railhead. It has total reserves of 52.2 million tonnes grading 8 per cent zinc, 2 per cent lead and 47 grams per tonne silver. Construction is planned to start in 1992 on this $140-million project. It is expected to process 3500 tonnes of ore per day and employ 200 during construction and more then 300 for the expected 15 years plus of mine life.

Work continues on optimizing reserves, grades, plant design and mining plan for the large **Mount Milligan** Cu-Au project of Continental Gold Corporation, a wholly owned subsidiary of Placer Dome Inc. This vast alkalic porphyry Cu-Au system, hosted by Late Triassic to Early Jurassic volcanic rocks of the Takla Group and high-level intrusive rocks, has been under continuous exploration by Continental Gold Corporation and BP Resources Canada Inc. since 1986. In November 1990 it was purchased by Placer Dome Inc. The project is at Stage 1 in the Mine

1991
EXPLORATION HIGHLIGHTS



Development Review Process. Work during 1991 included extensive large-diameter drilling for better delineation of reserves, metallurgical research, preparation of mill and dump sites, and a feasibility study. The results of the feasibility study are expected by year end.

A number of other significant developments occurred at five producing mines. The **Golden Bear** gold mine, of North American Metals Corporation and Homestake Mining (B.C.) Ltd., has solved most of its production and milling problems, and the resulting high production costs. As a result, the project had a fair year with a final projected production of at least 1500 kilograms (52 000 ounces). It is also significant that Homestake increased its interest in the project by buying the Chevron Minerals' interest.

The **Bell Copper** mine of Noranda Inc. successfully completed a major drilling program, started in 1990, at the perimeter of the pit. Significant new ore reserves, which could extend mine life by as much as 20 years, were indicated by this program. Access to these reserves, however, will require a significant push back of the pit walls. Other possible sources of ore could be nearby properties such as Granisle, Morrison and Hearne Hill. The mine is also experimenting with leaching its extensive waste dumps, a technique that has been successfully used at the **Gibraltar** copper mine and produced copper at a cost of 79 cents per kilogram (36 cents per pound).

The discovery of the **Gibraltar North** zone by Gibraltar Mines Ltd. and Newcoast Silver Mines Ltd. was the direct result of their investment in geological modelling and a subsequent drill program. This completely blind orebody of approximately 30 to 40 million tonnes, better than run-of-mine grade and with significant gold and silver credits, may well be the faulted extension of the **Gibraltar West** zone.

A similar success, again due to good geological modelling followed by drilling, was achieved by Westmin Resources Limited at its Myra Falls Cu-Pb-Zn-Ag-Au mine with the discovery, in May, of the **Gap Zone**. This new, blind orebody is located between the Lynx and H-W mines, in upper H-W stratigraphy, thus defining a new exploration target. It is considerably better than run-of-mine grade, particularly for gold, and has been tested over a strike length of 250 metres. A decision to proceed with the development of the Gap Zone was announced August 5th and the access drift from the existing H-W 18-level workings is well under way.

Underground development started earlier in the year at the **Samatosum** open-pit Pb-Zn-Ag-Au mine of Minnova Inc. and Rea Gold Corporation, and underground drilling discovered a new gold zone in April. The new zone is about 50 metres below current development and strikes almost parallel to the main ore horizon. Although severely depressed silver prices have been threatening an earlier than planned mine closure in October 1992, the new discovery may well extend the life of the mine.

EXPLORATION HIGHLIGHTS

Following the trend that began in 1988-89, exploration interest continued for multi-element deposits of large size, such as porphyry Cu-Au deposits, or those with high unit values, such as volcanogenic massive sulphide and high-quality precious metal deposits. The main targets of exploration are summarized below:

Porphyry Copper – Gold Deposits

Porphyry Cu-Au systems hosted by Late Triassic to Early Jurassic and younger volcanic sequences in the Intermontane Belt continue to be the most popular exploration target in the province. Exploration using this model was responsible for sustained activity in the Quesnel trough, particularly from Fort St. James to the Toodoggone area, in the Stewart–Stikine region, in the Cariboo plateau southwest of Williams Lake, in the Nelson–Salmo area and on northern Vancouver Island.

In the Stikine region, Kennecott Canada Inc. and Hudson Bay Mining and Smelting Co. Ltd. completed a major drilling program, an extensive re-assaying program, and air and ground geophysics on and around the main **Galore Creek** deposit. Their objective was to extend reserves and better define smaller but much richer deposits which ring the main deposit. The main Galore Creek deposit, discovered in the 1950s, is in an Upper Triassic alkalic porphyry system hosted by coeval and cogenetic volcanic rocks. It has drill-indicated reserves of 113 million tonnes grading 1.06 per cent copper, 0.445 gram per tonne gold and 8.57 grams per tonne silver.

Ten kilometres east of Galore Creek, Consolidated Rhodes Resources Ltd. completed a trenching program on the **Copper Canyon** and **Copper Penny** properties, old prospects drilled by Amax in the late 1950s. This is another porphyry system similar in age and setting to Galore Creek. A 1990 drilling program by Consolidated Rhodes Resources Ltd. on three zones produced drill-indicated reserves of 32.5 million tonnes grading 0.75 per cent copper, 1.16 grams per tonne gold and 17.1 grams per tonne silver. A 0.5 per cent copper-equivalent cut-off grade gives a geological potential for an additional 90 million tonnes along the strike extensions of the three known zones.

Newhawk Gold Mines Ltd. and Granduc Gold Mines Ltd. carried out an extensive surface exploration program, including prospecting, geological mapping, sampling and diamond drilling on their **Sulphurets** property, located 65 kilometres northwest of Stewart. Newhawk's extensive holdings include at least four large Cu±Au±Mo zones hosted by intensely altered Lower to

Table 1
New Mines, Development and Advanced Exploration Projects

Company Name	Project Name	Commodity	Estimated Tonnes (000s)	Estimated Grade	Estimated Employment
New Mines					
Cominco Ltd., Prime Resources Group Inc.	Snip	Au	940	28.5 g/t Au	150
Bethlehem Resources Corp. Goldnev Resources Inc.	Goldstream	Cu, Zn	1860	4.81% Cu, 3.06% Zn	100
Westmin Resources Ltd. Tenajon Resources Corp.	SB	Au, Ag, Cu, Pb, Zn	96.2	9.91g/t Au, 65.9 g/t Ag, 0.32% Cu, 0.67% Pb, 3.85% Zn	30
Development (Production Decision Announced)					
Westmin Resources Ltd.	Gap Zone/Myra Falls	Cu, Pb, Zn, Ag, Au	217	2.7% Cu, 1.1% Pb, 16.6% Zn, 213 g/t Ag, 3.4 g/t Au	568
Advanced Exploration					
Geddes Resources Ltd.	Windy Craggy	Cu, Au, Ag, Co	297 400	1.38% Cu, 0.18 g/t Au, 3.62 g/t Ag, 0.09% Co	600
International Corona Corp. Prime Resources Group Inc. Placer Dome Inc.	Eskay Creek	Au, Ag	1810.9	50.40 g/t Au, 1913 g/t Ag	200+
Curragh Resources Inc. Asturiana de Zinc	Stronsay (Cirque)	Zn, Pb, Ag	52 200	8% Zn, 2% Pb, 47 g/t Ag	300+
Placer Dome Inc	Mt. Milligan	Cu, Au	400 000	0.2% Cu, 0.48 g/t Au	350+
Noranda Inc.	Bell	Cu, Au	150 000		
Gibraltar Mines Ltd. Newcoast Silver Mines Ltd.	Gibraltar North	Cu	40 000	0.4% Cu	
Cominco Ltd. Redfern Resources Ltd.	Tulsequah Chief	Cu, Pb, Zn, Au, Ag	7270	1.55% Cu, 1.22% Pb, 6.81% Zn 2.74 g/t Au, 109.37 g/t Ag	
Newhawk Gold Mines Ltd. Granduc Gold Mines Ltd.	Sulphurets	Au, Ag	500.8	14.33 g/t Au, 617 g/t Ag	50 - 60
Canarc Resources Corp. Suntac Minerals Corp.	Polaris Taku	Au	1454.5	15.43 g/t Au	
Hapsburg Resources Inc. Timmins Nickel Inc.	Dome Mountain	Au, Ag	294.5	12.17 g/t Au, 80.22 g/t Ag	55
Equinox Resources Ltd. Cheni Gold Mines Ltd.	J & L / Main Zone	Zn, Pb, Au, Ag	4770	4.3% Zn, 2.7% Pb, 7.2 g/t Au, 7.4 g/t Ag	80 - 90
	Yellow Jacket Zone	Zn, Pb, Ag	910	7.4% Zn, 2.6% Pb, 55 g/t Ag	
Fairfield Minerals Ltd.	Elk	Au	212.7	21.7 g/t Au	
Westpine Metals Ltd.	Taseko	Cu, Au	9521.8	0.582% Cu, 0.754 g/t Au	
Taseko Mines Ltd	Fish Lake	Cu, Au	545 000	0.32% Cu, 0.548 g/t Au	

Middle Jurassic volcanic and sedimentary rocks of the Stewart Complex. These are intruded by structurally controlled, alkalic to subalkalic plutons of similar age.

Less than 50 kilometres southeast of the Toodoggone precious metals camp, El Condor Resources Ltd. carried out an extensive and very successful diamond drilling program on its **Kemess** Au-Cu project as a follow up to an equally successful 1990 drilling program. This large property consists of at least four prophyry Au-Cu zones hosted by Late Triassic to Lower Jurassic, high level calcalkalic intrusions and associated volcanic rocks. The property is strategically located close to the Cheni Gold Mines access road and possible rail transportation. Drilling to date on the **Kemess South** deposit (60% – El Condor Resources Ltd., 40% – St. Philips Resources Inc.) has indicated reserves of 229 million tonnes grading 0.23 per cent copper and 0.651 gram per tonne gold in a continuous, tabular deposit open to expansion and including an upper,supergene enriched blanket containing native copper and chalcocite.

Drilling results from the **Kemess North** deposit (100% – El Condor Resources Ltd.) has indicated reserves of 116.3 million tonnes grading 0.19 per cent copper and 0.377 gram per tonne gold. This deposit is located 6 kilometres north of the South deposit and is within a larger zone enriched in sulphides. The Kemess project is about to enter the Mine Development Review Process.

Farther to the south, along more than 250 kilometres of the same Late Triassic to Early Jurassic volcanic belt known as the Quesnel Trough, work was done on several other similar projects and most included drilling. Notable amongst these are **Lorraine** and **Dorothy** of Kennco Explorations, **Cat** of BP Resources Canada Inc. and Lysander Gold Corporation, **Klawli** of Rio Algom Exploration Inc., **Chuchi Lake** of BP Resources Canada Inc. and **Col** of Kookaburra Gold Corp.

Approximately 130 kilometres southwest of Williams Lake, outside the Quesnel trough, Taseko Mines Ltd. carried out a 10-hole, large-diameter drilling program at its **Fish Lake** porphyry Au-Cu project. This drilling achieved excellent core recovery and was successful in significantly upgrading continuity and grade of mineralization to a depth of 800 metres. This program, and 168 other drill holes completed by previous operators, confirmed an initial reserve block of 545 million tonnes grading 0.32 per cent copper and 0.548 gram per tonne gold. The Fish Lake deposit is associated with an Upper Cretaceous calcalkalic quartz diorite stock and dike complex which cuts coeval, and probably cogenetic, volcanic rocks. The deposit was first discovered by two prospectors in the early 1930s, and since 1962 has been drilled by several companies, large and small, with mixed success.

On northern Vancouver Island, Moraga Resources Ltd. carried out further drilling on the **Hushamu** zone of the **Expo** property. It was optioned from BHP-Utah Ltd. which operates the nearby **Island Copper** mine. Current reserves at Hushamu are estimated at 118 million tonnes grading 0.28 per cent copper, 0.01 per cent molybdenum and 0.342 gram per tonne gold. Moraga and Crew Natural Resources Ltd. also carried out a preliminary mineral inventory and optimized pit study on their nearby **Red Dog** zone which yielded a reserve of 41.1 million tonnes grading 0.26 per cent copper, 0.006 per cent molybdenum and 0.342 gram per tonne gold. Both deposits are viewed as potential sources of ore for the Island Copper mine where reserves will be depleted in 1997. Moraga Resources Ltd. was acquired by Yordex Resources Inc. in August.

Near Salmo, within the Rossland volcanic belt, Noranda Exploration Company Limited and Hemlo Gold Mines Inc. drilled the **Katie** property which is held under option from Yellowjack Resources Ltd. This property is a large porphyry Cu-Au system associated with Lower Jurassic diorite and volcanic rocks of the Rossland Group. Drill holes cut mineralized sections from 60 to 139 metres in length, grading from 0.36 to 0.24 per cent copper and from 0.308 to 0.240 gram per tonne gold.

Volcanogenic and Sediment-hosted Massive Sulphide Deposits

Volcanogenic massive sulphide targets in Paleozoic and Mesozoic submarine volcanic sequences continued to be the focus of exploration because of their relatively high unit value and multi-element nature.

Cominco Ltd. and Redfern Resources Ltd. completed another very successful drilling program at their **Tulsequah Chief** property, confirming and extending favourable drilling results obtained in 1990. Preliminary reserves at Tulsequah Chief have been increased to 7.27 million tonnes grading 1.55 per cent copper, 1.22 per cent lead, 6.81 per cent zinc, 2.74 grams per tonne gold and 109.37 grams per tonne silver.

American Fibre Corporation and Silver Butte Resources Ltd. completed a major diamond drilling program on the **Sib** deposit. Mineralization at Sib is similar in character and geologic setting, and only 5 kilometres southwest of Eskay's 21B zone.

Granges Inc., in joint venture with Springer Resources Ltd. and Cove Resources Corp., completed a drilling program and obtained significant intersections of gold and silver mineralization on the **Unuk River** project. This property is only 5 kilometres south of the Eskay Creek deposit and in a similar geologic setting.

Approximately 40 kilometres west of Eskay Creek, along the Iskut River, Eurus Resource Corporation and Thios Resources Inc. completed a program of diamond drilling, air and ground geophysics and geochemistry on

Table 2
1991 Exploration Highlights

Company Name	Project Name	Commodity	Estimated Tonnes (000s)	Estimated Grade	Exploration Expenditures ($ Millions)
Kennecott Canada Inc., Hudson Bay Mining and Smelting Co. Ltd.	Galore Creek	Cu, Au, Ag	113 000	1.06% Cu, 0.445 g/t Au 8.57 g/t Ag	3.35
Consolidated Rhodes Resources Ltd.	Copper Canyon	Cu, Au, Ag	32 450	0.75% Cu, 1.16 g/t Au, 17.1g/t Ag	<1
Newhawk Gold Mines Ltd., Granduc Gold Mines Ltd.	Sulphurets	Cu, Au	n/a	n/a	1.5
El Condor Resources Ltd., St Philips Resources Inc.	Kemess South	Cu, Au	229 090	0.23% Cu, 0.651 g/t Au	2.9 (incl. Kemess North)
El Condor Resources Ltd.	Kemess North	Cu, Au	116 363	0.19% Cu, 0.377 g/t Au	
Kennco Explorations (Canada) limited	Lorraine/ Dorothy	Cu, Au	n/a	n/a	0.675
BP Resources Canada Inc., Lysander Gold Corporation	Cat	Cu, Au	n/a	n/a	0.4
Rio Algom Exploration Inc.	Klawli	Cu, Au	n/a	n/a	0.13
Jordex Resources Inc.	Hushamu	Cu, Au, Mo	118 000	0.28% Cu, 0.342 g/t Au 0.01% Mo	0.11
Jordex Resources Inc., Crew Natural Resources Ltd.	Red Dog	Cu, Au, Mo	41 136	0.26% Cu, 0.342 g/t Au, 0.006% Mo	0.17
Yellowjack Resources Ltd.	Katie	Cu, Au	n/a	n/a	0.9
American Fibre Corporation, Silver Butte Resources Ltd.	Sib	Au, Ag	n/a	n/a	3.75
Granges Inc, Springer Resources Ltd., Cove Resources Corp.	Unuk River	Au, Ag	n/a	n/a	n/a
Eurus Resources Corp., Thios Resources Inc.	Rock and Roll	Zn, Pb, Cu, Au, Ag	582	3.08% Zn, 0.79% Pb, 0.64% Cu 2.47g/t Au, 336g/t Ag	1.5
Minnova Inc.	Seneca	Zn, Cu, Au, Ag	1509.5	3.7% Zn, 0.63% Cu, 0.823g/t Au, 41.14g/t Ag	0.5
Chapleau Resources Ltd., Barkhor Resources Inc., Kokanee Explorations Ltd.	Darlin	Pb, Zn	n/a	n/a	0.3
Lac Minerals Inc,	Red Mountian	Au	840	12.68 g/t Au	1.5
Columbia Gold Mines Ltd., Eurus Resources Corp.	Spectrum	Au	275	15.77g/t Au	1
Minnova Inc., Eighty-Eight Resources Ltd.	Clisbako	Au	n/a	n/a	n/a

the **Rock and Roll** project, a volcanogenic massive sulphide target hosted by Triassic tuffs and argillites. Preliminary reserves for the **Black Dog** and **SRV** zones of this project are 582 000 tonnes grading 3.08 per cent zinc, 0.79 per cent lead, 0.64 per cent copper, 2.47 grams per tonne gold and 336 grams per tonne silver over a 700-metre strike length.

Along the Fraser Valley near Harrison Lake, Minnova Inc. continued detailed geological studies, followed by drilling on the **Seneca** project. Work to date has been rewarded by the discovery of the **Vent** and the **Fleetwood** zones in addition to the original Seneca deposit. These massive sulphide deposits are hosted by Jura-Cretaceous felsic volcanic rocks of the Harrison Lake Formation. Reserves at the Seneca are estimated at 1 509 500 tonnes grading 3.57 per cent zinc, 0.63 per cent copper, 0.823 gram per tonne gold and 41. 4 grams per tonne silver.

In the southeastern corner of the province, 8 kilometres south of the Cominco Ltd. **Sullivan** mine, Chapleau Resources Ltd., Barkhor Resources Inc. and Kokanee Explorations Ltd. (as operator), carried out a drilling program on the **Darlin** project. They encountered five massive sulphide beds from 15 to 60 centimetres thick in stratigraphy similar to that which hosts the Sullivan mine. Late in the year, Minnova Inc. optioned the contiguous **Horn** property from Kokanee Explorations Ltd.

Vein and Transitional Deposits

Epithermal and mesothermal veins and deposits that formed in a setting transitional between the classic epithermal environment and the deeper seated porphyry environment are other important targets. Some of these deposits, such as the mesothermal veins of the **Snip** gold mine and parts of the **Sulphurets** (Brucejack Lake zone) property of Newhawk Gold Mines Ltd. and Granduc Gold Mines Ltd. are in British Columbia's Golden Triangle. At Sulphurets work in 1991 was focused mostly on porphyry Cu-Au zones with bulk mineable potential.

Canarc Resource Corporation and Suntac Minerals Corporaton carried out a diamond drilling program at their **Polaris Taku** property, approximately 100 kilometres south of Atlin, and across the Taku river from the **Tulsequah Chief** massive sulphide deposits. This program was successful in extending the known limits of mineralization. At the start of the 1991 program total geological reserves stood at 1 454 500 tonnes grading 15.43 grams per tonne gold for a total of 20 412 kilograms (720 000 ounces) for the C-vein. Complete results of the 1991 program are pending.

Twenty-six kilometres west of the Stewart-Cassiar highway near the village of Iskut, Columbia Gold Mines Ltd. and Eurus Resource Corporation carried out a major diamond drilling program on the **Spectrum** project. The objective was to test for high-grade, structurally controlled gold zones and low-grade disseminated Au-Cu mineralization hosted by intensely altered andesitic volcanic rocks intruded by a Jura-Cretaceous quartz monozonite. Preliminary total reserve estimates for the higher grade zones are 275 000 tonnes grading 15.77 grams per tonne gold, using a 10.28 grams per tonne gold cut-off grade. Bulk tonnage estimates, including high-grade reserves, are 8.393 million tonnes grading 1.268 grams per tonne gold and 0.18 per cent copper.

Lac Minerals Inc. completed a diamond drilling program on its **Red Mountain** gold property located 15 kilometres east of Stewart. This is a newly discovered, structurally controlled, mesothermal vein system related to a porphyry environment. A preliminary reserve of 840 000 tonnes grading 12.68 grams per tonne gold has been established for the MARC zone.

Forty kilometres east of Smithers, Hapsburg Resources Inc. (formerly Teeshin Resources Ltd.) and Timmins Nickel Inc., carried out a program of surface and underground drilling and drifting on the **Dome Mountain** project under a joint venture agreement. Bulk samples were sent to the Equity Silver mine and to the Premier Gold mine for a custom milling test. Ore reserves are calculated at 294 500 tonnes grading 12.17 grams per tonne gold and 80.22 grams per tonne silver.

Approximately 100 kilometres west of Quesnel, Minnova Inc. carried out an extensive program of surface trenching and diamond drilling on the **Clisbako** Au-Ag prospect under option from Eighty-eight Resources Ltd. This new discovery, in a previously under-explored area, is in a structurally controlled epithermal system hosted by Tertiary acid volcanics.

A short distance by road north of Revelstoke, Equinox Resources Ltd. and Cheni Gold Mines Ltd. completed a major program of diamond drilling and underground development on their **J&L** project, a stratabound polymetallic vein system. Current probable and possible reserves on the **Main** zone are estimated at 4.77 million tonnes grading 4.3 per cent zinc, 2.7 per cent lead, 7.2 grams per tonne gold, 72 grams per tonne silver and 4.5 per cent arsenic. Additional reserves on the newly discovered **Yellowjacket** zone are 910 000 tonnes grading 7.4 per cent zinc, 2.6 per cent lead and 55 grams per tonne silver.

In the south-central part of the province, 40 kilometres southeast of Merritt, Fairfield Minerals Ltd. completed an additional 37 diamond-drill holes on the Elk property, a quartz-sulphide mesothermal vein system of possible Tertiary age, hosted by the Jurassic Pennask granodiorite. A total of 107 holes drilled on this property since 1989 has traced the vein system over a strike length of 915 metres and 300 metres down dip. Drilling previous to the 1991 program indicated reserves of 212 730 tonnes

grading 21.7 grams per tonne gold and 21.9 grams per tonne silver using a cut-off grade of 10.3 grams per tonne gold across a 2-meter width. An updated estimate of these reserves is expected soon.

Near Taseko Lake, 250 kilometres north of Vancouver, Westpine Metals Ltd. continued drilling on their **Taseko** Cu-Au property. At least three zones of mineralization have been identified in Cretaceous volcanic rocks with intense argillic and silica alteration, and in the border phase of intrusive rocks of the Coast Range batholith. Mineable reserves for an open-pit operation have recently been calculated to be 9 521 800 tonnes grading 0.582 per cent copper and 0.754 gram per tonne gold.

SUMMARY AND A LOOK AT 1992

The year 1991 was one of significantly decreased exploration activity, but also one of important new developments. Junior companies and individual prospectors faced the brunt of hard times and struggled to carry on. The greatest obstacle was the shortage of risk capital. Notwithstanding this, British Columbia's exploration industry and world-class mineral endowment, proved their effectiveness and worth with significant progress in two major, large tonnage Au-Cu projects, Fish Lake and Kemess and in the discovery of new prospects such as the **Clisbako**.

In short, British Columbia is still a good place to explore and discover mines!

NOTE: Grade and tonnages cited in this paper are from information released by operators; monetary figures are in Canadian dollars.

TABLE 3

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
NORTHWESTERN DISTRICT						
Ala 9 (Ashworth Explr. Ltd.)		Atlin	104K/11W, 12E	Au, Ag, Zn, Pb, Cu		2 ddh, 304.8 m; air & grd geophys; pspg;geol
Barytex (Noranda Expl. Co. Ltd.)		Liard	104B/10E	Au	Vein	2 dhh, 213.4 m, geophys; geochem; geol
Bend (Tenajon Res. Corp.)	104B 132	Skeena	104B/1E	Au, Ag	Shear-hosted vein	10 ddh, 300 m
Big Onion (Varitech Res. Ltd.)	93L124	Omineca	93L/15W	Cu ,Mo	Porphyry	8 ddh, 1700 m
Bine - Lake (Noranda Expl. Co. Ltd.)	93M 003	Omineca	93L/16E, 93M/1	Au, Ag, Cu, Mo	Porphyry	13 ddh, 1261.9 m; air & grd geophys; geochem; geol; trenching
Bornagain (Eurus Res. Corp./ Thios Res. Inc./ Bel-Air Res.)	?	Liard	104B/11E	Au, Ag, Cu, Pb, Zn		5 dhh, 400 m; air grd geophys; pspg; trenching; geol
Burbridge Lake (D. Groot Logging Ltd.)	93L 223	Omineca	93L/10	Cu, Mo, Au, Ag, Zn	Porphyry	11 ddh, 1716 m
Chance (AIC Int'l. Res. Corp.)	93L 251	Omineca	93L/10E	Ag, Au, Cu, Zn, Pb	Mesothermal vein	2 ddh, 264 m; geophys
CL 6215 (Berube, C.)	104G 030	Liard	104P/6W	Au, Ag	Vein/Skarn	3 ddh, approx. 600 m; pspg
Dome Mountain (Timmins Nickel Inc.)	93L 276	Omineca	93L/10E, 15E	Au, Ag, Zn, Cu, Pb	Vein	drifting u/g drilling; bulk smplg; sfc drilling
Eric-Mako (Equity Silver Mines Ltd.)		Omineca	93L/2E	Cu, Ag		13 ddh, 1024 m; trenching, 57 m; OB drilling, 1376 m
Erickson (Total Erickson/Total Energold)	104P 029	Liard	104P/4E, 5E	Au	Mesothermal vein	20 ddh, 3896 m
Eskay Creek (Int's. Corona Corp.)	104B 008	Skeena	104B/9W	Au, Ag, Cu, Pb, Zn	VMS	u/g dvlp, 553 m; 95 u/g ddh, 3793 m; 12 sfc ddh, 2800 m; geophys;geochem
Fireweed (Mansfield Mins. Inc.)	93M 151	Omineca	93L/15, 16 93M/1, 2	Ag, Zn, Pb, Cu, Au	Vein/Bx/Rpl	18 ddh, 2982 m; geophys
Forgold (Gold Fields Cdn. Mining Ltd.)		Liard	104B/15E	Cu, Au		5 ddh, 935.7 m; geophys; geochem; geol
Galore Creek (Kennecott Canada Inc.)	104G 090	Liard	104G/3W, 4E	Cu, Au, Ag	Porphyry	49 ddh, 13830 m; air & grd geophys; geochem;geol
GNC (Int'l Corona Corp.)		Skeena	104B/9W	Au, Ag, Pb, Zn, Cu	Massive Sulphide	4 ddh, 900 m; sfc and down hole geophys; geol.
Golden Bear mine (Golden Bear Operating Co. Ltd.)	104K 079	Atlin	104K/1	Au	Shear-hosted/ Rpl/Skarn	14 ddh, 3870 m; 7 u/g ddh, 606 m; 40 m u/g dvlp; pspg; geol;geochem
GOZ-RDN (Noranda Expl. Co. Ltd.)		Liard	104B/15E 104G/2E	Au, Ag, Cu, Pb, Zn	Vein	10 ddh, 1403.6 m; geophys; geochem; geol

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Haida-Catspaw (Omega Services)	104B 288	Skeena	104B/8E	Au, Ag	Vein	3 ddh, 289.9 m; trenching
Hearne (Chapman, Dave)	93M 006	Omineca	93M/1W	Cu, Au	Breccia pipe	7 ddh
Independence (Armeno Res. Inc.)	104A 038	Skeena	104A/4W	Au, Ag, Cu	Vein	11 ddh, 1338.5 m; pspg; geol
Indian (Westmin Res. Ltd.)	104B 031	Skeena	104A/4W 104B/1E	Ag, Au	Vein	3 ddh, 378 m
Inel (Gulf Int'l. Min. Ltd.)	104B 113	Liard	104B/10W	Au, Ag, Cu, Pb, Zn	Vein/SMS/BX	u/g & sfc geol; trenching, 35.4 m; pspg
Kemess North (El Condor Res. Ltd.)	94E 021	Omineca	94E/2	Cu, Au	Porphyry	18 ddh, 4613 m; geophys; geol
Kemess South (El Condor Res. Ltd.)	94E 094	Omineca	94E/2 94D/15	Au, Cu	Porphyry	45 ddh, 8784 m; geochem; geol; geophys
Knipple Lake (Noranda Expl. Co. Ltd.)		Skeena	104A/5W	Cu, Pb, Zn, Ag, Au	Vein	6 ddh, 346.6 m; geophys; geochem; geol
Lakewater (OreQuest Consultants Ltd.)		Skeena	104B/9W, 10E	Au, Ag, Pb, Zn, Cu	Massive sulphide	7 ddh
Lawyers (Cheni Gold Mines Inc.)	94E 067	Omineca	94E/6E	Au, Ag	Epithermal vein	40 to 50 ddh, 7000 m; mining lease survey geophys
Lucifer (Noranda Expl. Co. Ltd.)		Liard	104G/2E	Au		2 ddh, 493.3 m; geophys; geochem; geol
Metla (Galico Res. Inc.)		Atlin	104K/7E	Au, Ag		10 ddh
Midnight (Equity Silver Mines Ltd.)	93E 029	Omineca	93E/6	Au, Ag	Vein	12 ddh, 1365 m; trenching, 600 m; geol; geochem
MM 100 Group (KRL Res. Corp.)	104A 053	Skeena	104A/4W	Au	Vein	14 ddh, 1848 m; geophys; geochem
Moose (Porphyry Pearl) (Golden Rule Res. Ltd./ Manson Creek Res. Ltd.)	94E 084	Omineca	94E/6E	Au, Cu	Porphyry	7 ddh, 1100 m
More Creek (Noranda Expl. Co. Ltd.)		Liard	104G/1W, 2E	Au, Ag		1 ddh, 250 m
Mount McKendrick (Habsburg Res. Inc.)	93L 286	Omineca	93L/15	Pb, Zn, Au, Ag, Cu	Vein	3 ddh, 140.8 m
MR (Equity Silver Mines Ltd.)		Omineca	93M/2E	Ag, Cu, Au	Epithermal	6 ddh, 457 m; trenching, 1202 m
New Nanik (New Canamin Res. Ltd.)	93E 055	Omineca	93E/12E 13E	Cu, Mo, Au, Ag	Porphyry	5 ddh, 500 m
Nor 2-12 (Rio Algom Expl. Inc.)		Omineca	94D/15 94E/2W	Cu, Au	Porphyry	15 ddh, 1957 m; geophys; geochem; geol
OP-Pup (Consol. Goldwest Res. Ltd.)	104G 069	Liard	104G/3W, 4E	Cu, Au, Pb, Zn	Porphyry/Shear zones	2 ddh, 306.3 m geol; pspg
Outlaw (Glider Developments Inc.	104K 083	Atlin	104K/7, 10	Au, Ag, Pb, Zn, Cu	Vein/Skarn	2 ddh

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Paydirt (Pacific Century Explns. Ltd./ Ticker Tape Res. Ltd.)	104G 108	Liard	104G/3W 4E	Au, Cu	Shear-hosted vein/Porphyry	3 ddh, 271 m; geol; pspg
Phiz (Adrian Res. Ltd.)		Liard	104B/11E	Au, Cu, Pb	Vein	25 ddh, 2803 m; air & sfc geophys; geochem; geol; pspg
Pictou-Scarab (Internova Res. Ltd.)	104N 044	Atlin	104N/12E	Au, Ag	Vein	4 ddh, 470.8 m
Polaris-Taku (Suntac Minerals Corp.)	104K 003	Atlin	104K/12E	Au	Vein/Rpl	11 ddh, 3657.6 m
Poplar (New Canamin Res. Ltd.)	93L 239	Omineca	93E/15 93L/2, 3	Cu, Mo, Ag, Au	Porphyry	13 ddh, 1300 m; geochem
Q.C. (Quash Creek) (Dryden Res. Corp.)	104G 033	Liard	104G/9W 16W	Cu, Au, Zn, Ag	Porphyry/Vein	5 ddh, 721.9 m; geochem; geophys; geol
Red Mountain (Bond Gold Canada Inc.)	103P 086	Skeena	104A/4 103P/13	Au, Ag, Pb, Zn	Transitional	11 ddh, 2628 m; geol; pet; struct. study; geochem; geophys
Reg (Skyline Gold Corp.)	104B 107	Liard	104B/11E	Au, Ag	Mesothermal vein/VMS	8 ddh, 703 m; trenching, 240 m; geochem; geol
Rhub-Barb (Equity Silver Mines Ltd.)		Omineca	93F/11, 12	Au, Ag	Epithermal vein	5 ddh, 942.7 m
Rocher Deboule (Int'l Okengate Ventures Inc./ Trans Arctic)	93M 071	Omineca	93M/4E	Cu, Au, Ag, Co	Vein	u/g review and smplg;mine rehab; mtllg testing; pre-feas. study
Rock and Roll (Thios Res. Inc./ Eurus Res. Corp.)		Liard	104B/11	Au, Ag, Pb, Zn, Cu	VMS	90 ddh; air & grd geophys; geochem; geol; OB drilling
Rok (Cons. Carina Res. Corp./ Manchester Res. Corp.)	104H 001	Liard	104H/13W	Cu, Au	Porphyry	5 ddh, 716 m; geophys; geochem; geol; trenching, 1110 m
Shasta (Sable Res. Ltd./ Int'l Shasta Res. Ltd.	94E 050	Omineca	94E/2W, 7W, 3, 6E	Au, Ag	Vein	10 ddh, 900 m
Sheslay (Golden Ring Res. Ltd.)	104J 005	Atlin	104J/4, 5	Cu, Au, Ag, Pb, Zn		870 line km. air geophys; grd geophys; geochem; geol; pspg
Sib (American Fibre Corp.)		Skeena	104B/9W, 10E	Au, Ag	Massive sulphide/Vein	64 ddh, 6097.5 m; geol; lithogeochem; pspg
Silbak Premier - Premier Gold (Westmin Mines Ltd.)	104B 054	Skeena	104A/4W 104B/1E	Au, Ag	Vein/Porphyry	7.ddh, 1150 m; trenching
Sky Creek (Adrian Res. Ltd.)	104B 263	Liard	104B/11E	Au, Ag, Zn, Pb, Cu	VMS	15 ddh, 1250 m; air & grd geophys; geol; geochem; pspg; OB drill; trench
Snip Mine (Cominco Ltd.)	104B 250	Liard	104B/11E	Au	Mesothermal vein	80 lines km geophys; geol
Snippaker Mtn. (Solomon Res. Ltd.)	104B 299	Liard	104B/10W 11E	Au, Ag, Zn, Pb	Vein-shear controlled	6 ddh, 601.37 m; trenching; geol; pspg; geochem

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Snow Creek (Homestake Canada Ltd.)	93L 297	Omineca	93L/12E	Au, Ag, Zn, Cu, Pb	Vein	5 ddh
Snowfields (Westmin Res. Ltd.)	104B 048	Skeena	104B/1E	Au	Vein	10 ddh, 1235 m; trenching; geol; air geophys
Spectrum (Columbia Gold Mines Ltd.)	104G 036	Liard	104G/9W, 10E	Au, Cu	Vein/Porphyry/ Bx	24 ddh, 3987 m; geol; pspg
Strike (Navarre Res. Corp.)	104A 061	Skeena	104A/4W	Ag, Pb, Zn, Cu, Au	Vein	156 trenches; geophys
Sulphurets - Bruceside (Newhawk Gold Mines Ltd.)	104B 193	Skeena	104B/8E, 9E	Ag, Au	Epithermal vein	6 ddh; air geophys; geochem; geol; pspg; trenching
Sulphurets - Sulphside (Newhawk Gold Mines Ltd.)	104B 184	Skeena	104B/8, 9	Au, Cu	Porphyry	13 ddh; lithogeochem; geol;air geophys; pspg
Summit (Homestake Canada Ltd.)	104B 133	Skeena	104B/1E, 8E	Au, Ag	Vein	7 ddh, 1258 m
Teryl Option Project (Tymar Res. Inc./ Cons. Goldwest Res. Ltd.)		Liard	104B/11E			1 ddh;geochem; air & grd geophys; pspg
Treaty Creek (Tantalus Res. Ltd.)	104B 078	Skeena	104B/9	Au, Cu, Ag	Vein	5 ddh
Tulsequah Chief (Cominco Ltd.)	104K 002	Atlin	104K/11, 12	Ag, Au, Pb, Zn, Cu	VMS - Kuroko type	6 u/g ddh, 3109 m
Unuk River (Granges Inc.)	104B 083	Skeena	104B/8, 9 10	Au, Ag, Zn,	Massive Sulphide	30 ddh, 4910 m; geophys; geochem; trenching
Whiting Creek (Kennecott Canada Inc.)	93E 112	Omineca	93E/11, 14	Cu, Mo	Porphyry	2 ddh, 109.7 m
Windy Craggy (Geddes Res. Ltd.)	114P 002	Atlin	114P/12E,W	Cu, Co, Au, Ag, Zn	VMS	AMD wild life, water quality, weather, glaciology studies

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AA (Wind River Res. Ltd.)		Skeena	92M/15E	Graphite	Sedimentary, vein	ddh; geochem; metallurgical; geol
AOK (Takla Star Res. Ltd.)		Omineca	93N/1	Au, Cu	Alkali porphyry	ddh; geochem; geophys; geol
Ahbau (Appiant Res. Ltd./ Valerie Gold Res. Ltd.)	93G 007	Cariboo	93G/1W	Au, Cu, Zn, Pb, Ag	Vein, porphyry	3 ddh, 300 m
Ahdatay Lake (BP Res. Canada Ltd.)	93N 085	Omineca	93N/7W	Au, Cu	Alkali porphyry	4 ddh, 548 m; geophys
Alpha-Beta (Noranda Exploration Co. Ltd.)		Cariboo	93J/13	Au, Cu	Alkali porphyry	geol; geochem; geophys
Anom (BP Res. Canada Ltd.)	93N 099	Omineca	93N/1W	Au, Cu	Alkali porphyry	geol; geophys
BeeKeeper (Eastfield Res. Ltd.)	93A 155	Cariboo	93A/6W	Cu, Au, Hg	Vein, shear-hosted	geol; geochem; airborne geophys
Bio (Rio Algom Expln. Inc.)	93K 004	Omineca	93K/16	Au, Cu	Alkali porphyry	2 ddh, 244 m; geophys; trenching, 580 m; test pits

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
CH Claims (Placer Dome Inc.)		Omineca	93F/7E	Au, Ag	Epithermal	geol; geochem; geophys
Camp (Mutual Res. Ltd.)	93N 081	Omineca	93N/2E	Au, Cu	Alkali porphyry	7 ddh, 891 m; road, 11 km
Cantin Creek (Phelps Dodge Corp. of Canada Ltd.)	93B 027	Cariboo	93B/16E	Cu, Au	Alkali porphyry	12 ddh, 1800 m
Cat (BP Res. Canada Ltd.)	94C 069	Omineca	94C/3W	Au, Cu	Alkali porhyry	15 ddh, 2209 m; geol; geochem; geophys; test pits; road
Chuchi (BP Res. Canada Ltd.)	93N 159	Omineca	93N/1W, 2E	Au, Cu	Alkali porphyry	28 ddh, 4595 m; geol; geochem; geophys; road
Chuchi East (BP Res. Canada Ltd.)	93N 123	Omineca	93N/1W	Au, Cu	Alkali porphyry	4 ddh, 585 m; geol; geochem; geophys; road
Cirque (Strongsay Corp.)	94F 008	Omineca	94F/6E 11E	Pb, Zn, Ag	Sedex	86 u/g ddh, 4973 m; geol; bulk sampling
Clisbako (Minnova Inc.)		Cariboo	93C/9E	Au, Ag	Epithermal	19 ddh, 3017 m; geol; geochem; trenching, 2000 m; road
Col (Kookaburra Gold Corp.)	93N 101	Omineca	93N/2	Au, Cu	Porphyry	11 ddh, 1524 m; geol; geochem; geophys; road
Dem Lake (Noranda Expln. Co. Ltd.)		Omineca	93K/9W, 16W	Au, Cu	Alkali porphyry	Geol; geochem; geophys
Dorothy (Kennco Expln. (West) Ltd.)	93N 007	Omineca	93N/14	Au, Cu	Alkali porphyry	6 ddh, 1000 m; geol; geophys; road
Duckling Creek (BP Res. Canada Ltd.)	93N 005	Omineca	93N/14	Au, Cu	Alkali porphyry	4 ddh, 352 m; geol; geochem; geophys
Eagle (Noranda Expln. Co. Ltd.)	93N 092 091	Omineca	93N/2W	Au, Cu	Alkali porphyry	17 ddh, 1483 m, geol; geochem; geophys; road
Ferguson (Int'l. Impala Res. Ltd.)	94C 002	Omineca	94C/11	Pb, Zn, Ag	Manto	4 ddh, 279 m
Fish Lake (Taseko Mines Ltd.)	920 041	Clinton	920/5E	Au, Cu	Porphyry	10 ddh, 7500 m; geochem; metallurgical
Frasergold (Eureka Res. Inc.)	93A 150	Cariboo	93A/7E	Au	Phyllite-hosted	111 rcdh, 11 458 m; bulk sampling; pilot milling;road
GR (BP Res. Canada Ltd.)	93N 123	Omineca	93N/1W, 8W	Au, Cu	Alkali porphyry	1 ddh, 156 m; geol; geochem; geophys
Gibraltar (Gibraltar Mines Ltd.)	93B 007	Cariboo	93B/9W	Cu, Au, Zn, Ag	Shear, replacement	33 ddh, 8433 m; metallurgical
Heath (Tech Corp.)	93N 071 072	Omineca	93N/6E	Au, Cu	Porphyry, vein	10 ddh, 969 m; geophys
Heidi Lake (BP Res. Canada Ltd.)	93N 194	Omineca	93N/1E	Au, Cu	Alkali porphyry	12 ddh, 1675 m; road
KL (Noranda Expln. Co. Ltd.)	93N 032	Omineca	93N/7W	Au, Cu	Alkali porphyry	geol; geochem; geophys
Klaw - Norn (BP Res. Canada Ltd.)		Omineca	93N/1W, 2E	Au, Cu	Alkali porphyry	1 ddh, 122 m; geol; geophys
Klawli (Rio Algom Expln. Inc.)		Omineca	93N/7E, 8W	Au, Cu	Alkali porphyry	9 ddh, 1052 m; road
Kwanika/Valleau (Westmin Resources Ltd.)		Omineca	93N/6E, 7W	Au, Cu	Porphyry	trenching; geol; geochem; geophys

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Lake (Placer Dome Inc.)		Omineca	93O/4W	Au, Cu	Alkali porphyry	geol; geochem; geophys
Lip (BP Res. Canada Ltd.)		Omineca	93N/1E, 4W	Au, Cu	Alkali porphyry	4 ddh; road
Lorraine (Kennco Expln. (West) Ltd.)	93N 002	Omineca	93N/14W	Au, Cu	Alkali porphyry	12 ddh, 2000 m; geol; geophys
Lustdust (Alpha Gold Corp.)	93N 009	Omineca	93N/11	Ag, Pb, Zn, Au, Sb, Cu	Vein, replacement	ddh, road
Mass (Rio Algom Expln. Inc.)		Cariboo	93A/11,14	Au, Cu	Alkali porphyry	geol; geochem; airborne geophys, 400 km
Max (Rio Algom Expln. Inc.)	93K 020	Omineca	93K/16	Au, Cu	Alkali porphyry	geol; geochem; geophys
Mine (Sanfred Res. Ltd.)		Omineca	93N/1	Au, Cu	Alkali porphyry	geol; geochem; geophys; airborne geophys
Mitzi (Noranda Expln. Co. Ltd.)	93N 096	Omineca	93N/1W	Au, Cu	Alkali porphyry	3 ddh, 344 m; geol; geochem; geophys
Mount Milligan (Placer Dome Inc.)	93N 194	Omineca	93N/1E	Au, Cu	Alkali porphyry	19 ddh, 5059 m; geol; geochem; geophys; trenching, 1150 m; road
Mount Sidney Williams (Minnova Inc.)	93K 043 072	Omineca	93K/14W	Au	Vein	5 ddh, 511 m; geochem; geophys
Mount Skinner (Ottarasko/Northair Mines Ltd.)		Clinton	92N/9W	Au	Vein	6 ddh, 260 m; geol; geochem; geophys; trenching, 120m; road
Mount Tom (Inco Ltd.)		Clinton	92O/6	Au	Epithermal	geol; geochem; geophys
Mouse Mountain (Tech Corp.)	93G 005	Cariboo	93G/1W	Au, Cu	Alkali porphyry	9 ddh, 914 m; geol; geophys
Neil (Placer Dome Inc.)		Omineca	93N/11	Au, Cu	Alkali porphyry	geol; geochem; geophys
Newmac (Noranda Expln. Co. Ltd.)	92N 030	Clinton	92N/10,15	Au	Epithermal	7 ddh, 1338 m; geochem; geophys; test pits
Newton (Rea Gold Corp.)		Clinton	92O/13E	Au	Epithermal	geochem; trenching; road
PM-Klein (Noranda Expln. Col Ltd.)		Cariboo	93J/13	Au, Cu	Alkali porphyry	geol; geochem; geophys
Pan (Cominco Ltd.)		Cariboo	93G6	Au, Cu	Alkali porphyry	1 ddh, 150 m
Par (Cominco Ltd.)	94C 024 080	Omineca	94C/3E, 2W	Pb, Zn, Ag	Replacement	geol; geochem; geophys; trenching, 300 m; test pits; road
Patenaude (Cominco Ltd.)		Cariboo	93A/6	Au, Cu	Porphyry	7 ddh, 740 m; geol; geochem; geophys
Perkins Peak (Hunter Point Expln. Ltd.)	92N 010 012	Cariboo	92N/14	Au, Ag	Epithermal/vein	Drifting 88 m
Porphyry Creek (Tech Corp.)	94C 007	Omineca	94C/5, 94D	Au, Cu, Mo	Porphyry vein	3 ddh, 457 m; geol; geochem; geophys
Prince (Cominco Ltd.)		Cariboo	93G/15	Au, Cu	Alkali porphyry	1 ddh, 150 m; geol; geochem; geophys
QR (Rea Gold Corp.)	93A 121	Cariboo	93A/12	Au	Alkali porphyry	40 ddh, 2000 m

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Rain (BP Res. Canada Ltd.)		Omineca	93N/1E	Au, Cu	Alkali porphyry	1 ddh, 151 m
Redgold (Phelps Dodge Corp of Canada Ltd.)	93A 058	Cariboo	93A/6	Au, Cu	Alkali porphyry	12 ddh, 5000
Skook (BP Res. Canada Ltd.)	93N 140 141	Omineca	93N/1W, 2E	Au, Cu	Alkali porphyry	11 ddh, 1243 m; geol; geochem; geophys; road
Sowchea (Cominco Ltd.)	93K 036	Omineca	93K/8, 7	Au	Vein	geol; geochem; geophys; trenching, 250 m
Swan (Candela Res. Ltd.)	93N 073	Omineca	93N/6,11	Au, Cu	Alkali porphyry	4 ddh, 549 m; road
Tak (Placer Dome Inc.)		Omineca	93N/11E	Cu, Au	Alkali porphyry	3 ddh, 453 m; geol; geochem; geophys
Takla-Rainbow (Eastfield Res. Ltd.)	93N 082	Omineca	93N/11E,11	Au, Cu	Porphyry, vein	geol; geophys; geochem
Taseko (Alpine Expln. Corp.)	92O 038	Clinton	92O/3W	Au, Cu	Porphyry, transitional	14 ddh, 3800 m; road
Tchentlo (Westmin Res. Ltd.)		Omineca	93N/2	Au, Cu	Alkali porphyry	geol; geochem; geophys
Trail-Philips Lake (BP Res. Canada Ltd.)		Omineca	93N/1, 93O	Au, Cu	Alkali porphyry	2 ddh, 304 m; geol; geochem; geophys
Tsil (Noranda Expln Co. Ltd.)		Cariboo	93K/16W	Au, Cu	Alkali porphyry	geol; geochem; geophys
Valley Girl (Westmin Res. Ltd.)	93N 053 111	Omineca	93N/7W,10W	Au, Cu	Alkali porphyry	geol; geochem
Webb (Moondust Ventures Ltd.)		Omineca	93N/1W	Au, Cu	Alkali porphyry	5 ddh, road
Weedon (Placer Dome Inc.)		Cariboo	93J/10W,11	Au, Cu	Alkali porphyry	geochem; geophys
Williams Creek (Williams Creek Expln. Ltd.)	93H 079	Cariboo	93H/4E	Au	Vein	5 ddh, 800 m; geol; geochem; geophys
Windy (Lorne E. Ross)	93J 024	Cariboo	93J/13W	Au, Cu	Alkali porphyry	24 pcdh, 1600 m
Witch (Rio Algom Expln. Inc.)	93N 164 084	Omineca	93N/1W, 2E	Au, Cu	Alkali porphyry	9 ddh, 1327 m; trenching 600 m
Wudleau (Westmin Res. Ltd.)		Omineca	93N/6E, 7, 1	Au, Cu	Alkali porphyry	geochem; geol

SOUTH-CENTRAL DISTRICT

Allenby (Princeton Ind. Min.)	Similkameen	92H/7E	Zeolites	bulk sample	
Axe (Cominco Ltd.)	Similkameen	92H/9W,1	Cu, Au	Porphyry	11 pcddh, 200.1 m;geochem
Beaton (C. Boitard)	Kamloops	92I/10E	Cu, Au	Porphyry	6 ddh, 565.5 m; EM, 9.6 km;IP, 2km
Bend (Cominco Ltd.)	Golden	83D/1W	Pb-Zn	Massive sulphide	3 ddh, 1069 m
Birk Creek (Falconbridge Ltd.)	Kamloops	82M/5W	Cu, Pb, Zn, Ag, Au	Massive sulphide	8 ddh, 2426 m;pulse EM, 1970 m;geochem, 116 whole rock,496 assay

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
Blue Jay (Edward Peacher)		Vernon	82L/11E	Coal	Sedimentary	1 ddh, 15 m
Bogg (Placer Dome Inc.)		Kamloops	92P/10E	Cu, Au	Porphyry	4 trenches, 1420 m; geochem, 1684 soil
Bromley Creek (Felix Reyes)		Similkameen	92H/7E	Zeolites		bulk sample
Camp #1 (L. Mear)		Kamloops	92I/9E	Au, Cu	Porphyry	1 ddh, 70 m
Chip (Kennecott Canada Ltd.)		Lillooet	92J/10W	Cu, Pb, Zn, Au, Ag	Massive sulphide	Em, 25 km; mag, 57 km; geochem, 741 soil
Chu Chua (Minnova Inc.)		Kamloops	92P/8E	Cu, Ag, Au	Massive sulphide	9 ddh, 4950 m; downhole pulse EM
Craigmont (Craigmont Mines Ltd.)		Nicola	92I/2W	Magnetite Tailings		30 ddh
Deanna (T. Kirk Kilo Gold Mines Ltd.)		Osoyoos	82E/5W	Au	Skarn	6 ddh, 150 m
Deer (A. Bartlett)		Kamloops	92I/7E	Cu, Au	Porphyry	1 ddh
Dill (Placer Dome Inc/ Fairfield Minerals Ltd.)		Similkameen	92H/9W;1	Cu, Au	Porphyry/Vein	11 ddh, 2030 m; IP, 4.4 km; geochem
Drop (Andrew Babiy)		Kamloops	92I/8W	Au, Ag	Vein	1 pcdh, 50 m
Elk (Fairfield Minerals Ltd.)		Similkameen	92H/16W	Au, Ag	Vein	37 ddh, 6600 m; trenching, 50 m
Fairview (Oliver Gold Corp.)		Osoyoos	82E/4E	Au, Ag	Vein	6 ddh, 540 m
French Bar (R. Clark)		Clinton	92O/1W	Au	Vein	14 pcddh, 300 m; 12 trenches, 200 m; geochem, 400 samples
Gold Ridge (D. Cardinal)		Kamloops	92I/4E	talc-magnesite		8 ddh, 747 m
Goldstream (Ore Quest Consultants Inc.)		Revelstoke	82M/8, 9	Cu, Zn	Massive sulphide	35 ddh, 8000 m
Griz (Minnova Inc.)		Kamloops	82M/5	Ag, Cu, Pb, Zn, Au	Massive sulphide	2 ddh, 287 m; 1P, 7 km; mag, 10 km; geochem 400 soils
Hit and Miss (Vanco Expl. Ltd.)		Similkameen	92H/1E	Cu, Pb, Zn	Porphyry	3 ddh, trenching
Iron Mask (Eureka Res. Inc.)		Kamloops	92I/15E	Cu, Au	Porphyry	pcdh
J & J (A. Ismay Assoc. Inc.)		Kamloops	92H/13E	Talc	Metamorphic	13 ddh, 1130 m
J & L (Equinox Res. Ltd.)		Revelstoke	82M/8E	Au, Cu, Zn, Pb	Stratabound/Vein	27 ddh, (u/g), 5605 m; 50 ddh, (surface), 8272 m; 3 trenches; geochem
Kamad (Homestake Canada Ltd.)		Kamloops	82M/4W	Au, Ag, Cu, Pb, Zn	Massive sulphide	4 ddh, 2313 m; pulse EM, 1000 m; geochem

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
Log (Cominco Ltd.)		Similkameen	92H/15E	Cu, Au	Porphyry	15 pcdh, 1067 m; road, 1120 m; geochem
Love Oil (Avino Mines and Res. Ltd.)		Lillooet	92J/15W	Au, Ag	Vein	drifting, ddh; rehab
Lumby (Quinto Mining Corp.)		Vernon	82L/7W	Au, Ag	Vein	pcdh (u/g)
M & R (Afton Operating Corp.)		Kamloops	92H/10E	Cu, Au	Porphyry	6 rcdh, 250 m; geochem, 64 soil, 18 rock
MGM (Teck Corp.)		Golden	83D/1E	Pb, Zn, Ag	Shale-hosted Massive sulphide	4 ddh, 1874 m; trenching mag, 7.4 km; UTEM, 1092 m; geochem, 232 soil
Mastadon (Teck Expl. Ltd.)		Revelstoke	82M/1E	Zn, Pb, Cd	Massive sulphide	7 ddh, 685 m; trenching, 40 m
Mila (Goldbank Ventures Inc.)		Kamloops	82M/12E	Ag, Cu, Zn, Pb, Au	Massive sulphide	7 ddh, 1408 m; mag, 12.7 km
Mosquito King (Plateau) (Minnova Inc.)		Kamloops	82M/4E	Au, Cu, Pb, Zn, Ag	Massive sulphide	16 ddh, 2100 m; IP, VLF, mag, 55 km; goechem; 1000 soil; 400 rock
Murphy (Murphy-Shewchuk)		Similkameen	92H/7E	Cu, Au	Porphyry	1 ddh; trenching
Ranchlands (Mountain Minerals Ltd.)		Kamloops	92I/14	Zeolite		bulk sample
Raven (Reese River Res. Corp.)		Lillooet	92J/9	Au	Vein	10 hand ddh; geol
Reg-Byr (Afton Operating Corp.)		Kamloops	92I/9W	Cu, Au, Mo	Porphyry	8 pcdh, 684.3 m; geochem, 211 rock
Samatosum (Minnova Inc.)		Kamloops	82M/4W	Ag, Cu, Zn, Pb, Au	Vein/Massive sulphide	147 ddh (121 u/g, 26 surface), 9074 m; drifting
Second (Cyprus Gold Canada Ltd.)		Clinton	92O/1E	Au	Vein	10 ddh, 548 m; trenching
Snowflake (Quilchena Res. Ltd.)		Nicola	92H/15E	Cu, Au	Porphyry	3 ddh; trenching
Stmp 1 & 2 (L. Mear)		Kamloops	92I/8W	Au, Cu	Porphyry	1 ddh, 107 m
Tim 1 (Andrew Babiy)		Kamloops	92I/9W	Ag, Au	Vein	1 pcdh
Tor (E. Wedekind)		Similkameen	92H/7E	Au, PGE		2 ddh, 333 m;
Twin (Homestake Canada Ltd.)		Kamloops	82M/4W	Au, Ag, Pb, Zn	Massive sulphide	6 ddh, 4417 m; pulse Em, 2000 m; geochem
Vicars 1-4 (L. Mear)		Kamloops	92I/9E	Au, Cu	Porphyry	1 ddh, 107 m
Vin (Fairfield Minerals Ltd.)		Similkameen	92H/15E	Cu	Porphyry	geochem, 5231 soils (262 km)
Wayside (Carpenter Lake Res. Ltd.)		Lillooet	92J/15W	Au	Vein /Massive sulphide	4 ddh, 884 m

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
Whipsaw (Phelps Dodge Corp. Canada Ltd.)		Similkameen	92H/7E	Cu, Au, Mo	Porphyry	10 ddh, 1221 m; 12 pcdh, 845 m; road, 500 m
Wye (Apollo Developments Inc.)		Greenwood	82E/6E	Ag, Au, Pb, Zn	Vein	5 ddh; geophys (IP), 5.9 km
Zig (Minequest Explr. Assoc. Ltd.)		Nicola	92H/15E	Cu, Au	Porphyry	11 rcdh, 651 m; geochem
KOOTENAY DISTRICT						
Athelstan-Jackpot (Minnova Inc.)	82E 047	Greenwood	82E/2E	Au, Ag, Cu	Listwanite	6 ddh, 946 m; geochem
Bluebell (Canamax Res. Inc.)	82E 188	Greenwood	82E/2E	Au, Cu	Skarn	6 ddh, 970 m; geochem; geophys
Bull River (R.H. Stanfield)	82G 002	Fort Steele	82G/11W	Au, Ag, Cu, Pb, Zn, Cd	Vein	7 ddh, 4689 m; 5 rdh, 247.8 m; trenching; airborne geophys, 1206 km
Canam (Cominco Ltd.)		Fort Steele	82G/4W	Pb, Zn, Ag	Sedex	3 ddh, 869 m; trenching; geochem;geophys, 75 km
Castle Mountain, North Face (Fording Coal Ltd.)	82J 011	Fort Steele	82J/2W	Coal	Sedimentary	22 rdh, 4095.7 m
Clubine (Yellowjack Res. Ltd.)	82F 200	Nelson	82F/3W	Au, Pb, Zn, Ag	Vein	6 ddh, 743 m
Corbin - South Mine Extension (Byron Creek Collieries)	82G 052	Fort Steele	82G/7E	Coal	Sedimentary	15 kt bulk sample
Cottonwood Pitt (Noramco Mining Corp.)	82F 237	Nelson	82F/6E, 6W	Au, Cu	Porphyry	1 ddh, 486 m; geophys; geochem
Darlin (Kokanee Explr. Ltd.)		Fort Steele	82F/9E	Pb, Zn, Ag, Au	Sedex	13 ddh, 3025.8 m; geochem; geophys
David/Lew (Dragoon Res./Greenstone Res.)		Fort Steele	82F/8E	Au	Shear/vein	27 ddh, 2539.5 m; geophys
Duncan (Cominco Ltd.)	82K 023	Slocan	82K/7W	Zn, Pb	Remob. stratabound	2 ddh, 1069 m
Elkhorn Barite (Dynamic Drilling Fluids Ltd.)	82J 002	Golden	82J/5W	Barite	Vein, breccia	49 ddh, approx. 1400 m
Estella (Cominco Ltd.)	82G 008	Fort Steele	82G/13E	Zn, Pb, Ag, Cd	Vein	1 ddh, 708 m; geochem; geophys
Evergreen, Silverhawk (Teck Corp.)	82F 230	Nelson	82F/6W	Pb, Zn	Vein	4 ddh, 211 m; geophys; geochem
Greenhills (Westar Mining Ltd.)	82J 007	Fort Steele	82J/2W	Coal	Sedimentary	9 rdh, approx. 1400 m; 6 ddh
Katie (Noranda Explr./ Yellowjack Res.)	82F 291	Nelson	82F/3W	Cu, Au	Porphyry	9 ddh, 2014 m (drilling continuing); geochem; geophys
Kena (Noramco Mining Corp.)	82F 237	Nelson	82F/6W	Au, Cu	Porphyry	2 ddh, 588 m; geophys; geochem
Kenville Mine (Coral Industries Ltd.)	82F 086	Nelson	82F/6W	Au, Ag	Vein	exploration drifting
Line Creek (Manalta Coal/Crowsnest Res.)	82G 020	Fort Steele	82G/15W, J/02	Coal	Sedimentary	104 rdh, 17 250.7 m; 39 trenches, 777 m
Lower Henretta (Fording Coal Ltd.)	82J 012	Fort Steele	82J/2W	Coal	Sedimentary	33 rdh, 3483.7 m

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
Mt. Mahon (Minnova Inc.)		Fort Steele	82G/4W	Pb, Zn, Ag	Sedex	3 ddh, 1256 m
North Belt (Vangold Res./Antelope Res.)	82F 100	Trail Creek	82F/4W	Au, Cu	Vein	16 ddh, approx. 1585 m; u/g drifting and drilling; geophys: geochem
Ore Hill-Sumit (Yellowjack Res. Ltd.)	82F 053	Nelson	82F/3E	Au, Ag, Pb, Zn	Replacement/ vein	8 ddh, 1049 m; geochem
Outback (Inco Ltd.)		Greenwood	8E/9W	Au, Ag	Epithermal	6 ddh, 807.1 m
Paul-Mike (Dia Met Minerals Ltd.)		Fort Steele	82G/13E	Pb, Zn	Sedex	2 ddh, 100 m
Phoenix (Battle Mountain (Canada) Inc.)	82E 025	Greenwood	82E/2E	Au, Ag, Cu	Skarn	approx. 10 ddh, 915 m; geophys
Rainbow-Tam O'Shanter (Minnova Inc.)	82E 130	Greenwood	82E/2W	Au, Ag, Cu,	Porphyry/ skarn/vein	18 ddh, 2600 m; geophys; geochem
Royal Canadian (Nevada) (Hibernian Properties Ltd.)	82F 088	Nelson	82F/6W	Au, Ag	Vein	exploration drifting
Star (Kokanee Expln. Ltd.)	82F 089	Nelson	82F/1E	Pb, Zn, Ag	Vein, sedex	3 ddh, 1480.5 m; geochem
Stoney (Minnova Inc.)		Fort Steele	82G/4W	Pb, Zn, Ag	Sedex	1 ddh, 285.6 m
Sullivan Mine (Cominco Ltd.)	82F 052	Fort Steele	82F/9E, G/12	Pb, Zn, Ag	Sedex	diamond drilling, trenching
Surelock (Mountain Minerals Co. Ltd.)		Golden	82K/9W	Barite	Vein	drifting, 30.5 m
Tillicum Mountain (Columbia Gold Mines Ltd.)	82F 234	Slocan	82F/13E	Au	Skarn	approx. 1 kt bulk sample for metallurgical testing
Torrent (Bonny) (Mountain Minerals Co. Ltd.)	82G 065	Fort Steele	82G/13W	Barite (Ag, Au, Cu)	Vein, Breccia	10 ddh, 65.5 m
Vine (Kokanee Expln. Ltd.)	82G 035	Fort Steele	82G/5W	Pb, Zn, Cu	Vein	diamond drilling
Vulcan (Ascot Res. Ltd.)	82F 093	Fort Steele	82F/16W	Pb, Zn, Ag	Sedex	5 ddh, 1000 m
Whitewater (Highland Surprise) (CSA Res. Mgmt./Goldcorp)	82K 033	Slocan	82K/3E	Ag, Pb, Zn, Au	Vein, replacement	6 ddh, 405.6 m
Wildrose Claim Group (Randsburg Gold/Minnova Inc.)		Greenwood	82E/2E	Au, Cu, Mo	Skarn/porphyry	13 ddh, 824 m; trenching; geophys; geochem

SOUTHWEST DISTRICT - 1991 MAJOR PROJECTS

Avalanche (Teck Expln. Ltd.)		Lillooet	92J/10W	Au	Shear, vein	10 ddh, 1914 m; geochem; geophys
Deer/Sep (Dual Res./Antelope Res.		Alberni	92F/4E, 5E	Cu, Zn	Porphyry/skarn	4 ddh, 633 m
Expo (Moraga Res./Jordex Res.)	92L 240	Nanaimo	92L/12W	Cu, Mo, Au	Porphyry	7 ddh, 5250 m; drilling continuing
HPH/Holberg Inlet (Cameco Corp.)	92L 069	Nanaimo	92L/12W	Pb, Zn, Cu, Ag, Au	Skarn, manto	6 ddh, approx. 600 m; geochem; geophys
Ladner Creek/Emancipation (Anglo Swiss Mining Corp.)	92H 034	New West.	92H/11W	Au, Ag	Vein	3 u/g ddh, 122 m

Property (Operator)	MINFILE Number	Mining Division	NTS	Commodity	Deposit Type	Work Done
Lang Bay (Lang Bay Res. Ltd.)		Vancouver	92F/16W	Kaolin	Residual	rotary drilling; mill tests
Leo D' or (Leo D' or Mining Inc.)		Nanaimo	92L/7W	Marble	Metamorphic	bulk sampling, diamond drilling
Madhat (Pan Orvana Res. Inc.)		Nanaimo	92L/5E	Cu, Au	Porphyry/ epithermal	3 ddh, 486 m; geophys; geochem
Merry Widow (Taywin Res. Ltd.)	92L 043	Nanaimo	92L/6E, W	Au, Ag, Cu	Skarn, manto	2 ddh, 193 m
Murex (North Slope Minerals Inc.)	92F 206	Nanaimo	92F/14E	Au, Ag, Cu	Epithermal veins, breccias	diamond drilling
Myra Falls (Wesmin Res. Ltd.)	92F 071	Alberni	92F/12E	Cu, Zn, Pb, Au, Ag	VMS	u/g drifting and drilling; surface diamond drilling
Red Dog (Moraga Res. Ltd.)	92L 200	Nanaimo	92L/12W	Cu, Mo, Ag	Porphyry	8 ddh, 1240 m
Seneca (Agassiz-Weaver) (Minnova Inc.)	92H 013	New West.	92H/5W	Zn, Cu, Pb, Ag, Au	VMS	20 DDH, 5360 m; trenching; geophys geochem
Southeaster (Clear Creek Res. Ltd.)	103G 004	Skeena	103F/8E, G/5W	Au, Ag	Epithermal veins, breccias	14 ddh, 533 m; 13 trenches
Sumas Mountain (Pegasus Earth Sensing Corp.)	92G 037	New West.	92G/1E	Feldspar	Intrusive	9 ddh, 182 m; beneficiation tests
Tay Gold (Dalmation Res. Ltd.)	92F 212	Alberni	92F/6W	Au	Vein, breccia	6 ddh, 891 m
Tsable River Coal (Western Canadian Mining Corp.)	92F 333	Nanaimo	92F/7W, 10W	Coal	Sedimentary	20 ddh, approx. 3300 m; geophys
Vananda Gold (Vananda Gold Ltd.)	92F 271	Nanaimo	92F/10E, 15E	Au, Cu	Skarn	5 ddh, approx. 1368 m; trenching geophys; drilling continuing
Wellington Shale Quarry (IEC Investments Ltd.)		Nanaimo	92F/1E, G/4W	Shale	Sedimentary	9 ddh, approx. 310 m
Win (Essex Res. Corp.)	92L 181	Nanaimo	92L/12W	Zn, Pb, Ag, Au	Skarn	3 ddh, 320 m; geophys; geochem

Ministry of Energy, Mines
and Petroleum Resources
Mineral Resources Division
Hon. Anne Edwards, Minister

Supplement to:

MINERAL EXPLORATION REVIEW 1991
Central District

By E.L. Faulkner and B.E. Madu

INFORMATION CIRCULAR 1992-5

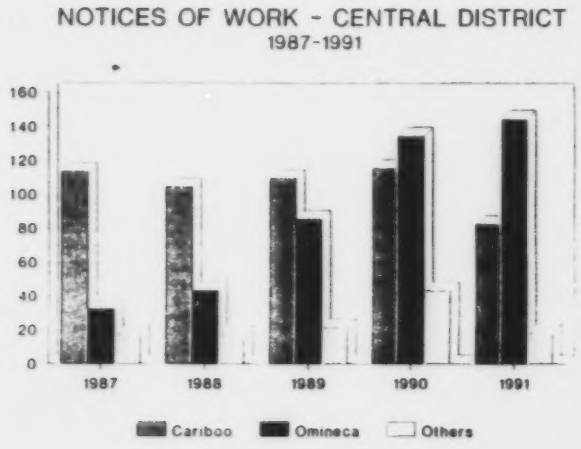
CENTRAL DISTRICT

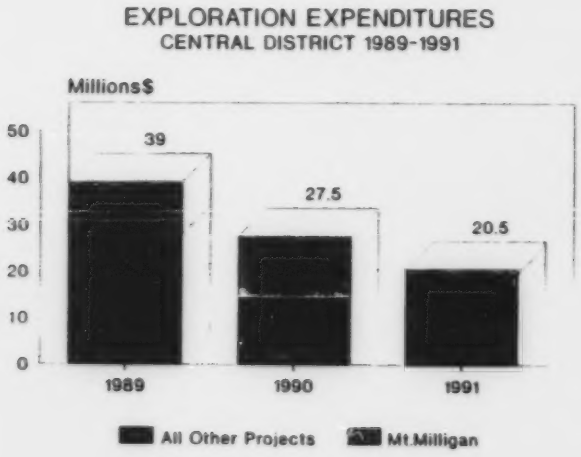
By E.L. Faulkner and B.E. Madu
District Geology, Prince George

INTRODUCTION

Precious metals in all types of deposit once again dominated exploration targets in the Central District. Despite being another very busy year, especially in the Omineca, exploration activity was down from 1990 levels and some 20 per cent of exploration projects saw work reduced from planned levels or were cancelled due to funding problems.

Mineral Notices of Work totalled 239, down 16 per cent from 1990. Figure 1 shows the continued increase in interest in porphyry copper-gold targets in the Omineca and the decline in activity in the Cariboo. Activity in other mining divisions was steady. Mineral exploration expenditures were down again, but as Figure 2 shows, if the major spending at the Mount Milligan project is allowed for, there was actually an increase in spending on other projects, most notably in the Omineca.





Interest in base metal/silver targets continued at modest but steady levels while interest in industrial minerals and stone was low. Placer operations increased this year, with Placer Notices of Work, at 401, up 12 per cent from 1990.

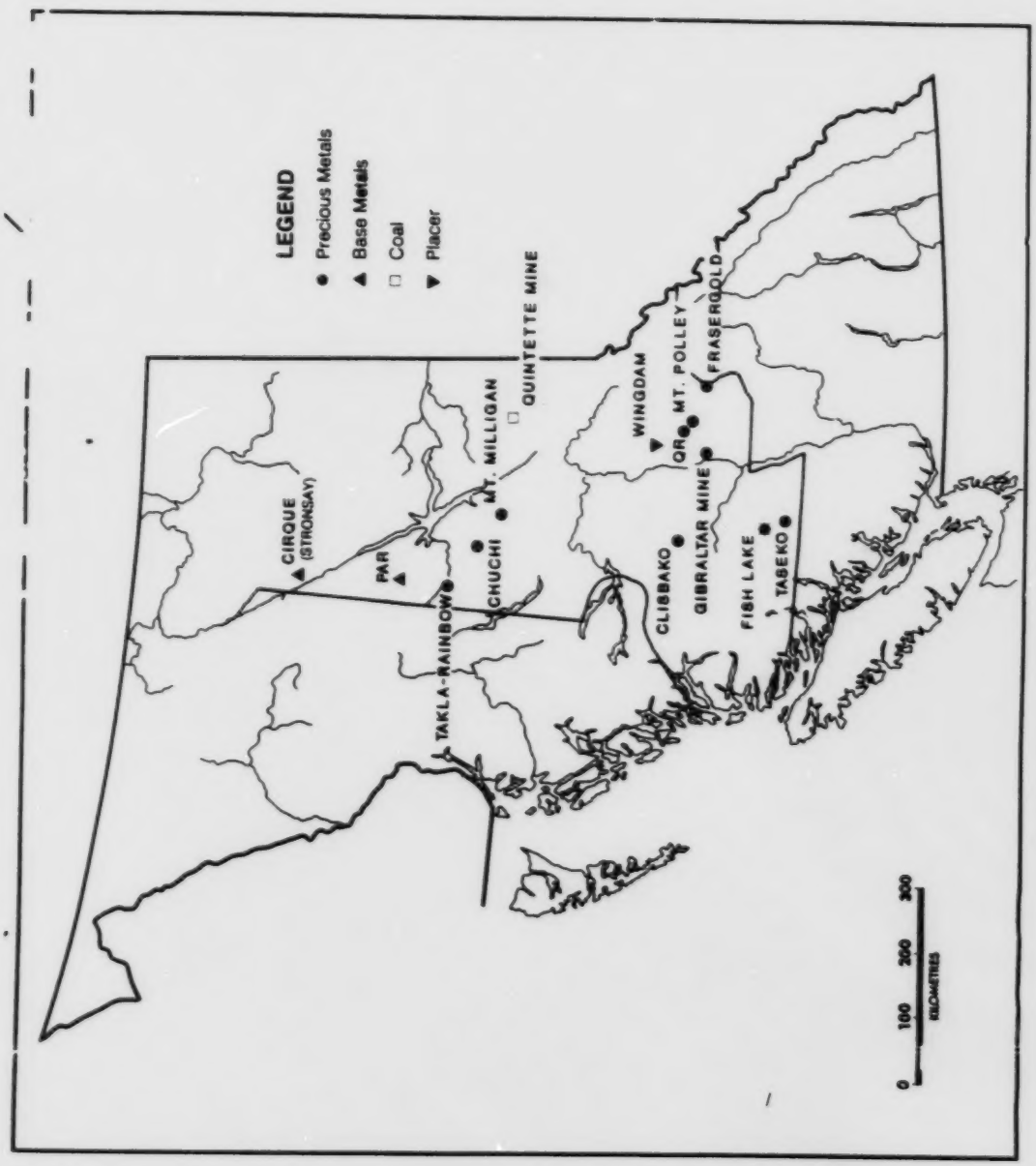
The four operating mines in the district produced at near historic levels, but no mining decisions were forthcoming from the five projects in the Mine Development Review process.

Northern Quesnel Trough

Most of the activity in the district was again concentrated in the northern Quesnel trough. The general lack of outcrop and heavy drift cover in much of the area continue to make exploration difficult and comparatively expensive. Despite road access to much of the area, logistic costs in some parts are still high.

Drilling of targets that have been outlined by induced polarization surveys continues to be the exploration technique of choice, but results are commonly disappointing or enigmatic. Many companies are paying increased attention to surficial geology in an attempt to improve planning and interpretation of geophysical and especially soil geochemical surveys.

Alkali porphyry copper-gold targets continued to dominate, but an increasing proportion of calcalkaline porphyry targets, mostly in the margin of or immediately adjacent to the Hogem batholith, are being examined. In general, the mineralization, structure and alteration patterns are much as expected from calcalkaline porphyry models developed elsewhere, but with the advantage for exploration that mineralization is more confined to the intrusive, and grades, while low, appear to be more uniform and consistent than has been the case with alkali porphyry targets. In the Kemess camp, the South Kemess deposit of El Condor Resources Ltd. has been the most notable example to date, and the potential for substantial increases in tonnages at several targets in this camp are excellent.


LEGEND
Precious Metals
Base Metals
Coal
Placer
QUINTETTE MINE
WINGDAM
MT. POLLEY
FRASERGOLD
OR
MT. MILLIGAN
CIRQUE
(STROMSAY)
PAR
CHUCHI
GIBRALTAR MINE
CLIBBAKO
FISH LAKE
TASEKO
TAKLA-RAINBOW
0
100
200
300
KILOMETRES

Two other trends are of note. At several properties, the geology of the contact zone of the Hogem batholith is complex, with a variety of intrusive border phases of uncertain provenance. Some mafic border phases, typically pyroxenites or mafic diorites, may have been derived from remelted Takla volcanics, with the consequence that associated gold and copper mineralization may not fit a porphyry model.

Gold mineralization has also been found in sheared Takla volcanics that does not appear to be of the vein or shear zone type sometimes found peripheral to an alkali porphyry system, as is the case at Mount Milligan, for example. It differs in that the gold is associated with pyrrhotite or pyrite, there is little or no associated copper or minor base metal sulphides, alteration is typically chloritic and the shearing has a regional pattern rather than a radial pattern around a nearby intrusive centre. Examples occur at the Takla Rainbow property, and have been reported from the Chuchi Lake area. This type of mineralization may prove to be more widespread, and, as has been found at the Chuchi property of BP Resources Canada Limited, it may have large tonnage potential.

Southern Quesnel Trough

The number of projects in the southern Quesnel trough declined more than 30 per cent this year. Ground is coming open at an increasing rate and the area may be coming to the end of a major exploration cycle. Unfortunately, to date, no new mines have resulted. There were only a few major projects in the area this year. Most notable were Eureka Resources Inc. surface and underground exploration of the Frasergold basal phyllite-hosted gold property, and Gibraltar Mines Ltd. exploration adjacent to its current operation.

Coast Range Marginal Belt and Fraser Plateau

Significant exploration took place on a variety of targets in this area. The reexamination of the Fish Lake calcalkaline porphyry copper-gold deposit by Taseko Mines Ltd. has greatly increased the tonnage at the deposit and has prompted staking by a number of companies, mostly in the belt of Kingsvale volcanics north of Fish Lake. This has already been followed by some initial-stage exploration programs.

Westpine Metals Ltd. remained the only company with a major program on transitional replacement copper-gold targets along the margin of the Coast Range batholith, at its Taseko property. There were a few programs on epithermal targets either in veins associated with intrusive centres, or in alteration zones in Ootsa volcanics, with some encouraging results reported by Minnova Inc. at the Clisbako property. The potential of this region is still largely unexplored.

OTHER AREAS AND ACTIVITY

Base Metal / Silver Targets

There was continued but modest interest in sedex and base metal/silver vein targets, with mixed results reported. In the Muskwa Ranges, Stronsay Corporation's preproduction program at the Stronsay (fomerly Cirque) deposit, plus the fact that the area now has road access, has so far failed to renew much interest in the area. There were no other major projects in the area and most of those announced were not funded. In the Swannell Ranges, generally disappointing results were reported, but Cominco Ltd. was sufficiently encouraged by results at the Par property to stake additional ground in the area.

PLACER

It was another difficult year for placer operators, as the price of gold declined again in real terms, while costs continued to increase. Most affected were the medium and large-sized mechanized operations. The increase in the number of placer operations reflects a trend seen during a downturn in the economy, with people who would normally be employed in other endeavours turning to placer mining. An ambitious project by Gold Ridge Resources Inc. to mine the rich buried placers at Wingdam by means of a decline, was slowed by technical problems and funding difficulties.

PRODUCING MINES

There were important developments at two of the district's four operating mines: Teck Corporation assumed operational control of the Quintette coal mine after lengthy negotiations, and late in the year a debt restructuring package was agreed to. Plans to trim the workforce to 1000 people and reduce costs were implemented, and there is some optimism that the mine may be made profitable.

Deep drilling on a geological model at Gibraltar mine resulted in the discovery of the Gibraltar North orebody, the faulted extension of the Gibraltar West orebody. It is expected to result in a new Stage I pit of 30 to 35 million tonnes of reserves, with a significantly higher copper grade than current mill feed.

MINE DEVELOPMENT REVIEW PROCESS

There are still five projects in the review process, but unfortunately no production decisions were made during the year on any of them. Stronsay Corporation was unable to secure production funding for the Cirque deposit. The generally low tenor of the ore at the three porphyry properties in the review process caused funding problems for Imperial Metals' Mount Polley deposit, led to addi-

tional drilling and a reassessment of the QR deposit by new owners Rea Gold Corporation and resulted in a delay in a production decision by Placer Dome Inc. for the Mount Milligan deposit. The future of all five projects is uncertain at the time of writing.

OUTLOOK

Although another busy year is expected in 1992, the number of projects and expenditures will be down from 1991 levels. Most major companies reporting expect to have reduced exploration budgets this year, and it appears unlikely that junior companies not involved in joint ventures with majors will be able to do much more than property maintenance, if that. Prospectors have already reported that many of their options were dropped in 1991 and the trend is expected to continue. There is uncertainty at all levels in the industry.